WHERE SCIENCE

MEETS SOCIETY

CARL R. WOESE INSTITUTE FOR GENOMIC BIOLOGY

IGB

AGRICULTURE

ANTIBIOTIC DISCOVERY

BEHAVIOR

BIG DATA

BIOFUELS

BIOLOGICAL SYSTEMS

CLIMATE CHANGE

COLLABORATIVE PARTNERSHIPS

COMMUNITY EDUCATION

EVOLUTION

GENE NETWORKS

REGENERATIVE MEDICINE

TRANSLATIONAL MEDICINE

WOMEN'S HEALTH

IGB TIMELINE

2000-2015

Campus pioneers who have played a major role in the development of the IGB: Michael Aiken, Nancy Cantor, David Chicoine, Robert Easter, Peter Fox, Richard Herman, John Katzenellenbogen, Harris Lewin, Charles Miller, Gerald Shea, Shankar Subramanian, Carl Woese, Charles Zukoski

2000 – INSTITUTE FOR GENOMIC BIOLOGY APPROVED BY GOVERNOR RYAN

2002 – STATE GOVERNMENT FUNDING FOR BUILDING PROJECT RELEASED

2003 – HARRIS LEWIN NAMED FOUNDING DIRECTOR; COMPETITIVE CAMPUS-WIDE CALL FOR THEMATIC RESEARCH PROPOSALS; 9 APPROVED; GROUNDBREAKING

2004 – CONSTRUCTION BEGAN: A $75M, 186,000-square-foot state-of-the-art facility; FIRST TWO IGB GRANTS: $3M from the Dept. of Energy to study the effect of climate change on crops; $5M from the National Science Foundation for BeeSpace, an interactive environment for analyzing nature and nurture in societal roles

2005 – $14M IN NEW FEDERAL AND PRIVATE SUPPORT SECURED BY FACULTY; FACULTY RECOGNITIONS IN 2005: Theme leader Robinson elected to the National Academy of Sciences; Woese elected to Royal Society

2006 – CONSTRUCTION COMPLETED: November 2006; $1.5M FROM THE ILLINOIS REGENERATIVE MEDICINE INSTITUTE: For work on stem cell biology

2007 – BUILDING DEDICATED: March 29, 2007; $500M EBI PARTNERSHIP ANNOUNCED: Long and colleagues created first industry partnership: BP, University of California, Berkeley, University of Illinois at Urbana-Champaign and Lawrence Berkeley National Laboratory

2008 – FIRST PATENT APPLICATION FILED; EXTERNAL FUNDING REACHED $25M; NEW PROGRAM TO TEACH BUSINESS SKILLS TO LIFE SCIENTISTS LAUNCHED: The Certificate in Entrepreneurship and Management

– FACULTY RECOGNITIONS IN 2008: Wilfred van der Donk and Phillip Newmark appointed Howard Hughes Medical Institute investigators*

** Howard Hughes Medical Institute is one of the largest private funding organizations for biological and medical research in the United States*

DNA is the language of all living things. Genomics, the study of the structure and function of an organism's complete set of genetic material, gives scientists a powerful tool with which to study every form of life and every biological process.

The Carl R. Woese Institute for Genomic Biology (IGB) brings together diverse experts to address formidable challenges using genomics. Since 2007, our Institute—an experiment in transdisciplinary research—has yielded many discoveries and scientific advancements, continually supporting the hypothesis that the whole is greater than the sum of its parts.

IGB members are drawn from a broad range of disciplines, including the life sciences, social sciences, engineering, law and business. They remain an integral part of home departments while pursuing collaborative research projects in the Institute's state-of-the-art, $75-million, 186,000-square-foot facility. Theme leaders help coalesce members into thematic research groups housed in large shared laboratories.

Through innovative outreach and education programs, the IGB invites people of all ages to learn about and participate in transdisciplinary research. The IGB hosts accessible, hands-on educational activities for children and their families, as well as workshops and events designed to engage groups through relevant genomic research.

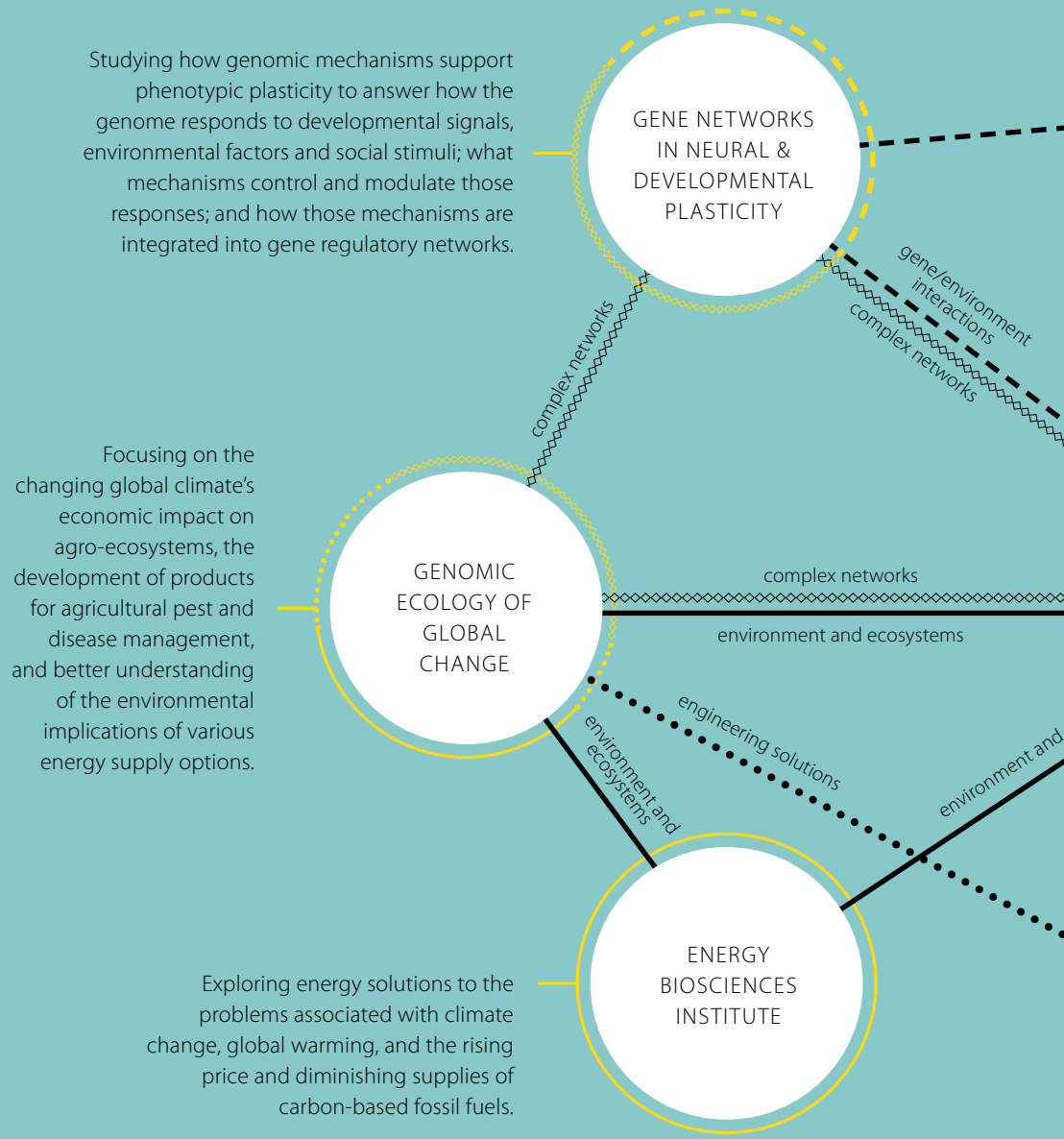
CARL R. WOESE

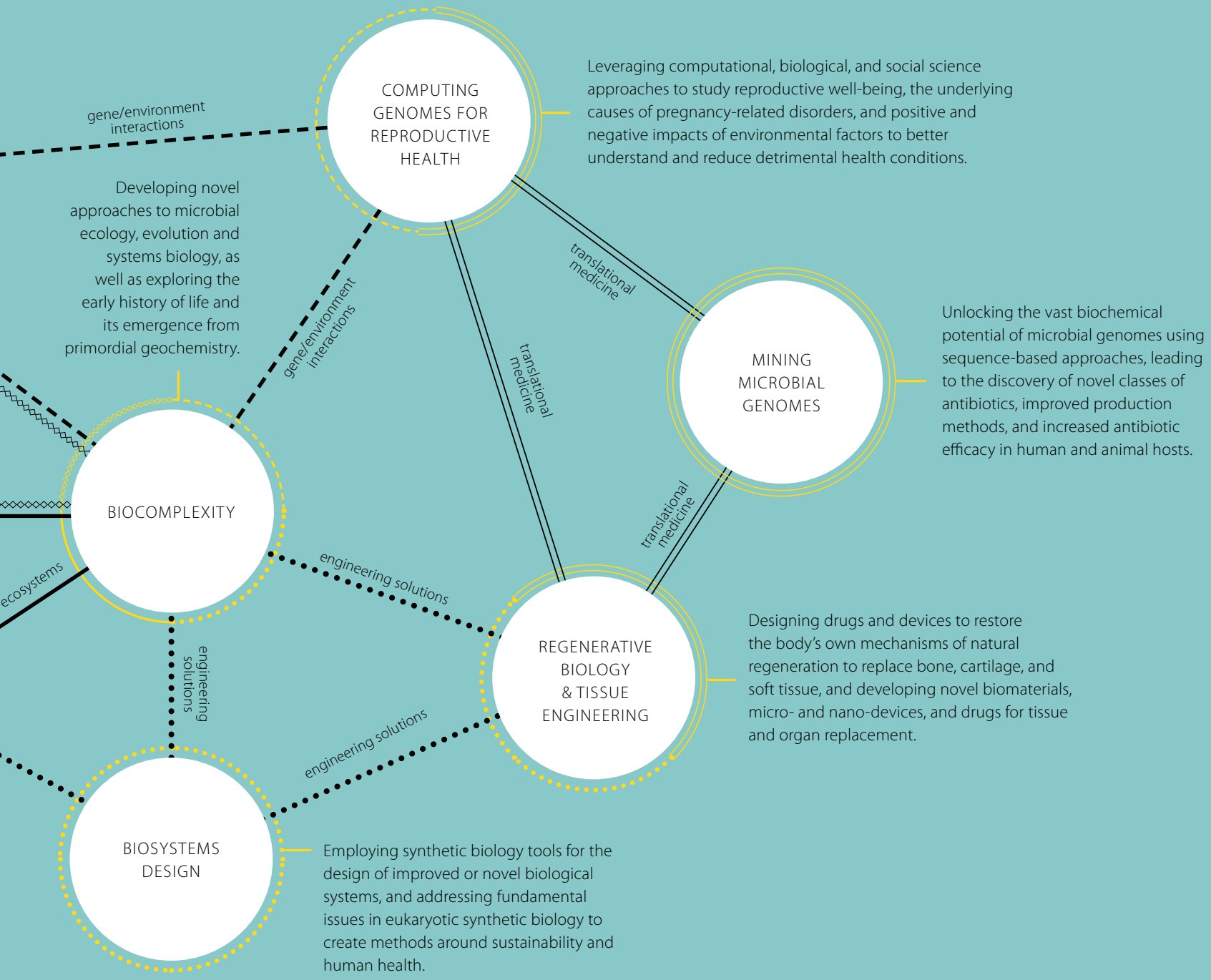
INSTITUTE FOR GENOMIC BIOLOGY

THE RESEARCH

The IGB—seven research themes and one externally funded institute.

Within these groups, IGB members address pressing problems facing society. As societal needs change and technology advances, Illinois researchers can propose new themes, allowing our Institute to evolve to meet new challenges.




COMPUTING GENOMES FOR REPRODUCTIVE HEALTH
Leveraging computational, biological, and social science approaches to study reproductive well-being, the underlying causes of pregnancy-related disorders, and positive and negative impacts of environmental factors to better understand and reduce detrimental health conditions.
gene/environment interactions
Developing novel approaches to microbial ecology, evolution and systems biology, as well as exploring the early history of life and its emergence from primordial geochemistry.
gene/environment interactions
translational medicine
translational medicine
MINING MICROBIAL GENOMES
Unlocking the vast biochemical potential of microbial genomes using sequence-based approaches, leading to the discovery of novel classes of antibiotics, improved production methods, and increased antibiotic efficacy in human and animal hosts.
translational medicine
BIOCOMPLEXITY
ecosystems
engineering solutions
engineering solutions
REGENERATIVE BIOLOGY & TISSUE ENGINEERING
Designing drugs and devices to restore the body's own mechanisms of natural regeneration to replace bone, cartilage, and soft tissue, and developing novel biomaterials, micro- and nano-devices, and drugs for tissue and organ replacement.
engineering solutions
BIOSYSTEMS DESIGN
Employing synthetic biology tools for the design of improved or novel biological systems, and addressing fundamental issues in eukaryotic synthetic biology to create methods around sustainability and human health.

PIONEERING ADVANCES IN THE LIFE SCIENCES

At the IGB, researchers are united by a common goal: to solve the pressing challenges faced by our global society, and build a better future for ourselves and for our planet.

The work of many IGB members explores **fundamental questions** in science, strengthening the foundation upon which advances in knowledge and technology are based. They have created intricate models of the molecules and reactions that drive the functions of a single cell, and created gene editing tools to improve those functions.

A growing area of research within the IGB focuses on **health and medicine**—discovering how disorders occur, and creating innovative technologies for their diagnosis and treatment. By studying how the genomes respond to many different factors, from the presence of microbes to childhood social stress, scientists may soon be able to predict and avert disorders before they appear.

Genomics provides a means to address the ailments of entire ecosystems. Several path-breaking efforts at the IGB are devoted to the development of sustainable **food and fuel** sources that are resilient to the stresses of global climate change.

Zhao and Ort named AAAS Fellows by the American Association for the Advancement of Science

FACULTY RECOGNITIONS IN 2009

ILLINOIS GOVERNOR PAT QUINN VISITED IGB

2009

Theme Leader Goldenfeld elected to National Academy of Sciences

Lewin awarded Wolf Prize in Agriculture

FACULTY RECOGNITIONS IN 2010

CELLULAR DECISION-MAKING IN CANCER NAMED AS NEW THEME

2010

Gerlt and colleagues created Enzyme Function Initiative, to develop a strategy for discovering the functions of unknown enzymes discovered in genome sequencing projects

$33.9M FOR A FIVE-YEAR "GLUE GRANT"

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The grant secured support for as many as 30 graduate students 2011-2016

$3.2M NATIONAL SCIENCE FOUNDATION INTEGRATIVE GRADUATE EDUCATION AND RESEARCH TRAINEESHIP (IGERT) GRANT AWARDED TO THE INSTITUTE FOR GENOMIC BIOLOGY AND THE SCHOOL OF INTEGRATIVE BIOLOGY

IGB and Beckman Institute form first interdisciplinary cognition and nutrition research center in the country, the Center for Nutrition, Learning, and Memory

$50M GRANT FROM ABBOTT NUTRITION

TWELVE PATENT APPLICATIONS FILED AND TWO PATENTS WERE ISSUED

2011

IGB HOSTED FIRST SUMMER INTERNSHIP FOR NATIVE AMERICANS IN GENOMICS

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LEWIN ELECTED TO NATIONAL ACADEMY OF SCIENCES

Long, Ort and colleagues lead Realizing Increased Photosynthetic Efficiency (RIPE) project

$25M GRANT FROM BILL & MELINDA GATES FOUNDATION

ROBINSON APPOINTED DIRECTOR

2012

COMPGEN INITIATIVE, $2.6M NSF FUNDED PARTNERSHIP WITH IGB AND COORDINATED SCIENCE LABORATORY

Long elected to Fellowship of the Royal Society

FACULTY RECOGNITIONS IN 2013

FIRST START-UP, "ACCELERATED GENOMICS"

EXTERNAL FUNDING HITS $37M

2013

NEW BIOSYSTEMS DESIGN THEME CREATED

8 PATENT APPLICATIONS FILED, 3 PATENTS ISSUED

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11 PATENT APPLICATIONS, 4 PATENTS ISSUED

KNOWENG CENTER OF EXCELLENCE IN BIG DATA COMPUTING FUNDED BY $9.3M NIH BD2K INITIATIVE

Moore named Howard Hughes Medical Institute Professor

Berenbaum received National Medal of Science

FACULTY RECOGNITIONS IN 2014

2014

IGB OFFICIALLY RENAMED TO CARL R. WOESE INSTITUTE FOR GENOMIC BIOLOGY

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FIFTH YEAR OF ART OF SCIENCE EXHIBIT

2015

CARL R. WOESE

INSTITUTE FOR GENOMIC BIOLOGY

WHERE SCIENCE MEETS SOCIETY

COVER SKETCH BY
CARL R. WOESE

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